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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/549,609 | 09/20/2005 | Tomoko Akai | 12480-000144/US | 8155 |
| 36593 7590 07/22/2010 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195 | | | | |
| EXAMINER | | | | |
| SQUALLS, MARGARET | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 1791 | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/549,609

Applicant(s)

AKAI ET AL.

Examiner

MARGARET SQUALLS

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-7 and 9-20 is/are pending in the application.
- 4a) Of the above claim(s) 6, 7 and 13-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-5, 9-12 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This Final Office Action is in response to the amendment filed on 6/10/2010.

a Applicant's cancellation of claim 2 is acknowledged by the office. Claim 1 has been amended to include the scope of now canceled claim 2. No amendments have been made to include new limitations. Claims 2 and 8 are canceled. Claims 6-7, and 13-16 are withdrawn. Claims 1, 3-20 are pending in the application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-4, 9, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al (JP 57-188432) in view of Aulich (US 4294811) for the same reasons as stated in the previous office action mailed 3/11/2010 on Page 2, Paragraph 3.

3. Claims 5, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al (JP 57-188432) in view of Aulich (US 4294811) in further view of

Coming Glass Works (US 3113855) for the same reasons as stated in the previous office action mailed 3/11/2010 on Page 3, Paragraph 4.

4. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al (JP 57-188432) in view of Aulich (US 4294811) or Nakagawa et al (JP '337) for the same reasons as stated in the previous office action mailed 3/11/2010 on Page 4, Paragraph 5.

Response to Arguments

5. Applicant's arguments filed 6/10/2010 have been fully considered but they are not persuasive. Applicants arguments as well as the examiners response are as follows:

Applicant argues the combination of Nakagawa (JP '432) and Aulich fails to explicitly teach or suggest the limitations of newly amended claim 1.

Applicant argues Aulich relates to quartz glass, not borosilicate glass and provides the following citation: "[t]he invention [of Aulich] provides a process for producing highly purified silicon from quartz sand so that it can be used directly in [the] fabrication of semiconductor components. In accordance with the principles of the invention, ordinary quartz sand is uniformly admixed with suitable glass-forming materials and transformed, via melting, into glass." Aulich, col. 2, 11. 56-63. The examiner disagrees. Aulich does in fact relate to borosilicate glass. Aulich combines quartz sand (SiO₂) with suitable glass forming materials to obtain "sodium boron silicate

glass [borosilicate glass] (Col 3, line 67). Suitable glass forming materials include boron oxide (B_2O_3) and sodium carbonate (Na_2O) (See Diagram 1).

Applicant argues the motivation to include the impurities in the quartz glass taught by Aulich in the borate glass of Nakagawa (JP'432). This argument is not clear. Aulich teaches the manufacture of borate glass using quartz sand (SiO_2) as a raw material (Col 3, line 55 — Col 4 line2).

Applicant argues Aulich does not teach or suggest a borosilicate glass including 0.1 wt% to 2.0 wt% of an oxide of the element of manganese, cerium, chromium, cobalt, and copper. The examiner disagrees. Oxide examples include Copper and Chromium and other transition metals (Col 3, lines 28-35). These metals (impurities) accumulate in the soft phase during phase separation (Col 3, lines 50-55 and col. 4, lines 3-27). The claimed metal oxide contaminate weight percent concentration of 0.1 to 2.0 wt% is a known metal oxide contaminate concentration found in borosilicate glass as referenced by Marshall et al (US 4933307) who teaches borosilicate glass comprises trace materials including Chromium Oxide within the claimed range of 0.1 to 2.0 wt% (Example 2) or Boyd (US 4116704) teaches borosilicate glass containing manganese oxide (MnO_2) within the claimed range of 0.1 to 2.0 wt% as well as cobalt oxide (Col 1, Table). Both Marshall and Boyd further support Aulich's teaching of borosilicate glass comprising metal oxides contaminates, specifically chromium, manganese and cobalt contaminates, and further supports the examiners previous rejection that metal oxides are known impurities of borosilicate glass and known to be found in concentrations within the glass in the range of 0.1 to 2.0 wt%.

Conclusion

6. Prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Marshall (US 4933307) which pertains to borosilicate glass having impurities such as chromium oxide impurities within the range of 0.1 to 2.0 wt%.
- Boyd (US 4116704) which teaches borosilicate glass having impurities such as manganese and cobalt oxides 0.1 to 2.0 wt %
- Carraher, Charles: "Seymour/Carraher's Polymer Chemistry, Marcel Dekker Distribution, New York, NY, US, 6th Edition Revised and Expanded, 2003, pages 486 which pertains to various metal oxides including cobalt, copper and manganese as impurities used in order to add color to glass.
- Akai et al. (US 20050028556) which pertains to recycling borosilicate glass containing color contaminants into high purity glass.

7. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARGARET BRODIE whose telephone number is (571)270-7713. The examiner can normally be reached during normal business hours. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Katarzyna Wyrozebski can be reached at (571)272-1127.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARGARET SQUALLS/
Examiner, Art Unit 1791

/KHANH NGUYEN/
Primary Examiner, Art Unit 1791

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